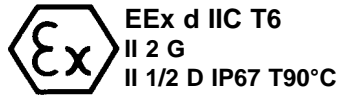
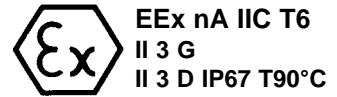


## Photoelectric Proximity Switch IRS/IRN/IRD-..-XC

**IRD-..-XC**

**Housing M30**

- Also for using with fibre optics
- Type IRD, applicable in Ex zones 1 and 20/21
- Type IRN, applicable in Ex zones 2 and 22
- Robust sensor for industrial applications

**IRN-..-XC-GD**


Type	IRS-5/10/15-XC	IRN-5/10/15-XC-GD	IRD-5/10/15-XC
<b>Technical Data</b>	5/10/15=Range in dm	5/10/15=Range in dm	5/10/15=Range in dm
Type of Ex protection	none	EEx nA IIC T6	EEx d IIC T6
Applicable in Ex Zones	none	Zones 2 and 22	Zones 1,2 and 20/21,22
Grouping / category	--	II 3 G, II 3 D IP67 T90°C	II 2 G, II 1/2 D IP67 T90°C
Range (on white paper A4, 80g)	0.5m to 1.5m (Designation 5, 10, 15)		
Light source	Infrared 880nm		
Optical beam pattern	appr. 12°		
Response time	5ms		
Supply voltage	24 VDC (20 to 28VDC), Um = maximum 30VDC		
Current consumption	max. 60mA		
Maximum power dissipation	1.4W		
Outputs	PNP, 100mA, short circuit protected		
Input, only types IR-..-DI (Disable-Input)	PNP compatible, Ri 10kΩ		
Package	M30, yellow brass Ms 58, nickel plated		
Protection rating at EN 60529	IP 65	IP 67	IP67
Working temperature range TA	-20°C < TA < +50°C		
Connection cable	4+PE x 0,5mm <sup>2</sup> , shielded / L=3m		
Socket for types IRS/IRN-.. S99	Socket M12, Lumberg type RSF, 5 terminals		
Accessories, all types	- 2 nuts M30 (optional 1 clamp on demand)		
Accessories, types IRD-.. + IRN-..-GD	- 1x Spare safety screw with packing ring for potentiometer sealing		
Accessories, only type IRN-..-GD S99	- 1x Safety lock device, mount at the cable connection, for locking the connection. (black synthetic device) - 1x Warning plate "Do not open/close when supply voltage connected", self-sealing, for gluing on the cable connector. - 1x Protection cap for the sensor socket.		
Accessories optional only type IRN-..-GD S99	- Single ended cordset, straight type: RKTS 5-298/xx or right angle type: RKWTH 5-298/xx, Lumberg M12/5P		
Options	- IR-..-XC(-GD)-DI (with disable function) - IR-..-XC(-GD)-2kHz (2kHz switching frequency) - IR-..-XC(-GD)-5kHz (5kHz switching frequency) - Cable length up to 100m - Oil and solvent resist cable for tray: On request - Halogen free cable: On request - IRS/IRN-..-XC(-GD) S99: Connector: M12, Lumberg, 5 terminals		
Function and LED indication			
Function on standard connection:	1 = +24VDC 2 = 0V 3 = Output 4 = Control-Output 5 optional = Disable Input DI yellow-green = PE white or blank = Cable shield		
Inverted function on changed polarity:	1 = 0V 2 = +24VDC 3 = Output 4 = Control-Output 5 optional = Disable Input DI yellow-green = PE white or blank = Cable shield		
LED indication and related output function:			
IR-..-DI (with optional Disable Input)	Uin: 18V-28VDC, DI=+24V=Disable Response time: <=200us Hold time: >=7.5ms, DI = 0V=Enable		

**Dimensions and Connection layout IRN/IRD...-XC:**

+24VDC	1	1
0V	2	2
Output	3	3
Control Out	4	--
Disable IN DI	--	4
PE	yellow-green	yellow-green

**Dimensions and Connection layout IRS/IRN...-XC S99:**

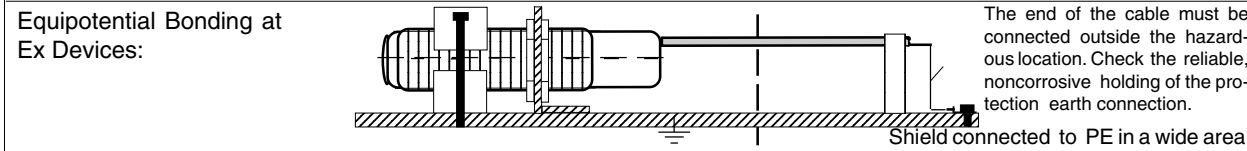
1/brown	IRN... S99	IRN...-DI S99
2/white	+24VDC	+24VDC
3/blue	Control-Out	DI
4/black	Output	Output
5/grey	PE	PE

**Dimensions and Connection layout IRS...-XC:**

1/brown	IR...	IRS...-DI
2/blue	+24VDC	+24VDC
3/black	Output	Output
4/grey	Control-Out	DI Input
yell.-green	PE	PE

**ATEX related designations of the Ex devices:**

CE 0158		IRD: II 2 G, II 1/2D IP67 T90°C / IRN: II 3 G, II 3 D IP67 T90°C
Device type		Manufacturer with address
Certification number		Type IRD: DMT 99 ATEX E 056/N1/N4/N5
TA: -20° < TA < 50°		Electrical data according to the chart
Date of manufacturing:		Numerals 4 to 7 of the serial number



**Operating Manual / EC - Declaration of Conformity:**

**Ex protection:**  
**General regulations for all types of Ex devices:**  
 It is necessary to take into consideration the valid international and national rules and regulations. The maximum rated supply voltage  $U_m = 30VDC$  must not be exceeded. The local equipotential bonding have to be done. The protective earth (PE) is solid connected with the housing. The cable have to be installed and protected against damages. The cable with termination fittings, or in cable tray systems and installed in a manner to avoid tensile stress at the termination fittings. To connect cables inside hazardous locations only use certificated Ex e housings. All cable terminals must be connected outside hazardous locations. Other than original manufacturer, additional optical lenses are not allowed in hazardous locations. In Ex zones 20/21 and 22, do not operate the sensors without fixed dustproof sealing crew. After adjust the potentiometer, the dustproof sealing crew with undamaged packing ring, must be screwed down. Damaged or lost screws or packing rings must be replaced.  
**Types: IRD...-XC** are applicable in Ex zones 1, 2 and 20/21, 22. For the zones 20/21 only the front part (optical lens) can be mounted inside the zone 20. The rear part with the cable must be in the zone 21.  
**Types: IRN...-XC-GD** are applicable in Ex zones 2 and 22.  
**Types: IRN...-XC-GD S99** are only applicable in Ex zones 2 & 22 hazardous locations. Do not separate the connector when the supply voltage is connected to the cable. When installing the sensor, the safety lock device must be fitted at the cable connector. The additional adhesive warning label must be fixed to the connector housing at the connection cable. Lumberg cordsets RKT5-298/xx (Straight type) RKTW/RKWTH 5-298/xx (Right angle type) are allowed ONLY. It is necessary to take into consideration the mounting prescription of the connector manufacturer. In dusty locations, the protection cap for the socket must be fitted, when the connection cable is NOT connected.  
**General mounting prescriptions:**  
 Do not exceed the maximum ratings. The electrical connections must be exactly as shown in the connection diagram. The cable shield must be connected short. The cable shield should be connected to the protection earth, large-surfaced. Connection cables must not be installed parallel to high voltage cables.  
**Function**  
 The sensor works basically as proximity switch on diffuse optical reflections. If the sensor detects reflected light, the output switches to +24VDC or 0V dependent of the polarity of the supply voltage. If the sensor works under safe conditions the LED shows green. If the sensor detects only poor reflected light, the LED shows yellow and the Control Output switches to +24VDC. If no reflected light will be recognized, the LED shows red, the outputs switches to 0V and the control-output is switching OFF. The load on the output can be connected to +24VDC or 0V (Push-pull type) and the load on the control-output must be connected to 0V (only PNP type).  
**Sensors with disable input, types IR...-DI:**  
 If several sensors are installed close to another, it is necessary to use sensors with disable input. By using the disable input DI, each sensor can

be controlled in a short reaction time. If only one sensor is activated in the same time, a mutual influence is precluded.  
 DI= 0V or not connected = emitter enabled  
 DI= High (+24VDC) = emitter disabled  
 For a correct function the sensor must be enabled for at minimum  $\geq 7.5ms$  (DI=0V). If the DI input will be disabled, the outputs holds the previous output status from the last enabled time.  
 The DI input is PNP compatible. For types with the disable input DI, the control-output is not available.  
**Optical range**  
 The nominal range is defined on white paper A4, 80g. The range will be influenced by the color, kind of surface and shape of the object.  
**Fibre optics**  
 For efficiently detection solutions look for our multiple program of fibre optics, also for high temperature areas. Fibre optics for Ex zones 0 and 20 must only be driven by ATEX approved sensors with limited optical output power at **DMT 99 ATEX 056/N5!**  
**Maintenance**  
 Protect the sensor and the optional fibre optics against pollution. If the fibre optics or the sensor lenses are contaminated, clean with alcohol. Do not use aggressive solvents. Optical fibres can be destroyed by strong solvents. Equipment must only be repaired or serviced by the manufacturer.  
**Safety Informations**  
 The sensors types IRS/IRN/IRD...-XC must not be used for Accident-Prevention! In worst case of disturbance, the output can show any state. When installing and operating with the sensor, it is necessary to take into consideration the relevant international and other national regulations. ATEX118a, EX-RL(BGR104), ElexV, TrF, TRD, UVV, BetrSichV(ATEX137), Einzel-RL 1999/92/EG.  
 Standards met:  
 - EN 50014, EN 50281-1-1, IRD: EN 50018, IRN: EN 50021;  
 EN 61000-4-2 to EN 61000-4-6, EN 61000-6-1/-2, EN 61000-6-4; EN 60529  
 - Ex protection: 94/9/EG (ATEX 100a)  
 - Machine directive: 98/37/EG  
 - Low voltage directive: 73/23/EWG, 93/68/EWG  
 - EMC: 89/336/EWG, 91/263/EWG, 92/31/EWG, 93/68/EWG  
 - Tech. File Rev.: EXD\_NA5A:2003  
**General Notes**  
 We reserve the right to modify our equipment. Our equipment is designed such way, that it has the least possible adverse effect on the environment. It neither emit or contain any damaging or siliconized substances and use a minimum of energy and resources. No longer usable or irreparable units must be disposed of in accordance with local waste disposal regulations.  
**Declaration of Conformity:**  
**Approvals: DMT 99 ATEX E 056/N1/N4/N5**  
 The conformity of the devices with the EC standards and directives and the EC-type examination certificate and the observation of the Quality Safety System ISO 9001 with the ATEX module "Production", declares:

Hans Bracher, Matrix Elektronik AG